

## Solution based CuInS<sub>2</sub> solar cell production with ZnO/CdS core-shell nanostructure

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Solar energy is one of promising future energy sources. Among many solar cells, CuInS<sub>2</sub> (CIS) thin film solar cell has gotten attention because of its high absorption coefficient, adjustable band gap, high incident photon conversion efficiency, good stability and so on. The cell efficiency has recorded 20.3% recently, but those processes required high vacuum conditions which would lead to high cost and limitation on mass production. This research is a try to produce CIS solar cell at low temperature with non-vacuum condition using solution coating. The solution containing Cu, In and S was spin-coated on ZnO/CdS nanowire core-shell structure, and made absorption layer. Therefore overall structure could be a superstrate structure solar cell. The nanostructure let contact area at each layer larger than that on flat structure, so that efficient light absorption and carrier transfer were possible. SEM, XRD, UV-transmittance were also measured. In conclusion, superstrate CIS solar was produced using solution process at low temperature with room pressure. The cell with ZnO nanostructure could show better efficiency than earlier superstrate solar cell.